

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Docket No.: P27172

Xiaomeng Chen, et al.

Confirmation No. 2925

Serial No.: 10/605,926

Group Art Unit: No. 2813

Filed: November 6, 2003

Examiner: Nguyen, Thanh T.

For: **METHOD FOR REDUCING AMINE BASED CONTAMINANTS**

Commissioner for Patents
U.S. Patent and Trademark Office
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Alexandria, VA 22314

AMENDMENT UNDER 37 C.F.R. §1.116

Sir:

In response to the Final Office Action dated June 5, 2006, please amend the above-identified application as follows.

Amendments to the drawings are set forth on page 2;

Amendments to the claims are set forth on page 3; and

Remarks begin on page 6.

If extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefor (including fees for net addition of claims) are hereby authorized to be charged to Deposit Account No. Account No. 09-0456.

AMENDMENT TO THE DRAWINGS

Please replace the six drawings sheets showing Figs. 1a, 1b, 1c, 1d, 1e, 2, 3a, 3b, 3c, 4a, 4b, 4c, 4d, 5a, 5b, 5c, 5d, 6a, 6b and 7 with the attached six "Replacement Sheet" drawing sheets showing Figs. 1a, 1b, 1c, 1d, 1e, 2, 3a, 3b, 3c, 4a, 4b, 4c, 4d, 5a, 5b, 5c, 5d, 6a, 6b and 7.

The drawings have been replaced with formal drawings. No new matter has been added.

AMENDMENT TO THE CLAIMS

Please **CANCEL** claims 2 and 13-30; and

Please **AMEND** claims 1, 3 and 5 as follows.

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for reducing resist poisoning, comprising the steps of:

forming a first structure in a dielectric on a substrate;

reducing amine related contaminants from the dielectric and the substrate prior to a formation of a second structure on the substrate such that the amine related contaminants will not diffuse out from either the substrate or the dielectric, wherein the reducing utilizes a plasma treatment which one of chemically ties up the amine related contaminants and binds, traps, or consumes the amine related contaminants during subsequent processing steps;

forming the second structure on the substrate; and

after the forming of the first structure, preventing poisoning of a resist layer in subsequent processing by the reducing,

wherein the reducing step includes providing an N₂O plasma wafer treatment to the dielectric and the substrate.

Claim 2 (Canceled).

3. (Currently Amended) The method of claim [[2]] 1, wherein the N₂O plasma wafer treatment is performed at approximately 400 degrees Celsius.

4. (Original) The method of claim 3, wherein the N₂O plasma treatment chemically binds, traps or consumes the contaminants such that the contaminants will

not diffuse out from either the substrate or the dielectric during the formation of the second structure.

5. (Withdrawn – Currently Amended) The method of claim [[2]] 1, wherein the reducing step includes a wet etching of approximately 30 seconds at 25 degrees Celsius 100:1 ratio of DHF (dilute hydrofluoric acid).

6. (Withdrawn) The method of claim 5, wherein the reducing step further includes the steps of:

- coating the substrate and the dielectric with organic antireflective coating film (ARC);

- baking at approximately 100 degrees Celsius to 250 degrees Celsius the ARC to remove amine based contaminants; and

- removing the ARC by dry stripping or plasma etching.

7. (Withdrawn) The method of claim 8, wherein the ARC is exposed to UV light.

8. (Withdrawn) The method of claim 1, wherein the reducing step further includes the steps of:

- coating the substrate and the dielectric with an organic antireflective coating film (ARC);

- baking the ARC at approximately 100 degrees Celsius to 250 degrees Celsius to remove amine based contaminants; and

- removing the ARC.

9. (Withdrawn) The method of claim 8, further comprising the step of depositing a plasma enhanced chemical vapor deposition (PECVD) oxide cap after removal of the ARC.

10. (Withdrawn) The method of claim 9, wherein the oxide cap is approximately 25 nm.

11. (Withdrawn) The method of claim 9, wherein prior to the deposition of the oxide cap, an annealing process is performed at about 400 degrees Celsius for about 60 seconds.

12. (Withdrawn) The method of claim 11, prior to the deposition of the oxide layer, a N₂O or O₂ plasma etch at an approximate temperature of 400 degrees Celsius is performed.

Claims 13-34 (Canceled).

35. (Previously Presented) The method of claim 1, wherein the forming the second structure on the substrate is substantially devoid of amine related contaminants.

REMARKS

Claims 1, 3-12 and 35 are currently pending in the application. By this amendment, claims 2 and 13-30 are canceled and claims 1, 3 and 5 are amended for the Examiner's consideration. The above amendments do not add new matter to the application and are fully supported by the specification. For example, support for the amendment to claim 1 is provided in original claim 2. Reconsideration of the rejected claims in view of the above amendments and the following remarks is respectfully requested.

Allowable Subject Matter

Applicants appreciate the indication that claims 2-4 contain allowable subject matter and would be allowable if presented in independent form. Accordingly, as claim 1 has been amended to recite the features of claim 2 and as withdrawn claims 13-30 have been canceled, Applicants respectfully submit that all of the pending claims 1, 3-12 and 35 are in condition for allowance for the following reasons.

35 U.S.C. §102 Rejection

Claims 1 and 35 were rejected under 35 U.S.C. §102(e) for being anticipated by U. S. Published Patent Application No. 2002/0081855 to JIANG et al. This rejection is respectfully traversed.

While Applicants do not agree that the invention is anticipated by JIANG, in order to advance prosecution, independent claim 1 has been amended to incorporate the features of allowable claim 2.

Accordingly, the instant rejection is moot and claims 1 and 35 should be allowed.

Accordingly, Applicants respectfully request that the rejection over claims 1 and 35 be withdrawn.

Rejoinder of Withdrawn Claims


Applicants submit that because claim 1 is now allowable, rejoinder of at least claims 5-12 and allowance of the same is now proper at least because they depend from claim 1.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. The Examiner is invited to contact the undersigned at the telephone number listed below, if needed. Applicant hereby makes a written conditional petition for extension of time, if required.

Please charge any deficiencies in fees and credit any overpayment of fees to
Deposit Account No. 09-0456.

Respectfully submitted,
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